

CALCULATING DEATHS ATTRIBUTABLE TO OBESITY

In their hypothetical examples, Flegal et al.^{1,2} applied the weighted-sum method³ to calculate deaths attributable to obesity. Our main concern about these calculations is that they did not take into account the chronic long-term effects of obesity or its dynamic nature. One obvious logical problem is that, although most people die after 75 years of age, it is cumulative obesity exposure rather than weight at a specific older age that contributes the most to the higher mortality rates associated with obesity.

Obesity is a chronic condition, and it takes years for obese individuals to develop conditions that are major causes of death, such as cardiovascular disease and cancer. Moreover, even with later weight loss, not all of the adverse effects can be reversed. Thus, the relative risks calculated from the oldest age groups do not reflect the true long-term impact of obesity on mortality. As a simple example, suppose someone was obese at age 45, had a heart attack at age 65, then lost a lot of weight and died at age 70. Most likely, obesity at age 45 rather than body mass index (BMI) at age 70 contributed to this person's death.

The essence of the population-attributable risk is to determine the number of premature deaths that could be prevented if obesity were avoided; and in the previous example, avoiding obesity at age 45 probably would have prevented the premature death at age 70. This scenario is analogous to the relationship between smoking and mortality; cumulative smoking history is more likely a better predictor of cancer and all-cause mortality than a snapshot of smoking status at a single older age (say, 75 years).

Flegal et al. argued that exclusion of participants with cardiovascular disease and cancer at baseline would make the estimates of at-

tributable deaths misleading because the resulting cohorts would not reflect the US population. However, these exclusions are necessary to obtain valid relative risks associated with obesity, because these conditions can lead to artifacts by reverse causation (i.e., a low BMI is sometimes the result, rather than the cause, of underlying illness). Similarly, in a study on cigarette smoking, if patients with cardiovascular disease and cancer at baseline were included, the effects of smoking in the general population would be seriously underestimated, as many patients would have stopped smoking because of their illness but still be at higher risk for death. ■

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